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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/746,713

12/21/2000

Yasuo Ohdaira

00629CIP/LH

1181

7590

12/16/2002

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EXAMINER

LEE, SHUN K

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 12/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/746,713

Applicant(s)

OHDAIRA ET AL.

Examiner

Shun Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 25 September 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/652,500.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 25 September 2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Amended claim 4 recites the limitation "a pulse signal for starting oscillation and finishing the oscillation in a time period shorter than each interval at which the pulse laser beam is oscillated" which was not described in the specification as filed (see also 35 U.S.C. 112, second paragraph rejection below).

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Amended claim 4 recites the limitation "a pulse signal for starting oscillation and finishing the oscillation in a time period shorter than each interval at which the pulse laser beam is oscillated" which is vague and indefinite since it is unclear what the pulse signal start oscillating and finish oscillating.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-5, 7-9, 11, 12, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Baer (US 5,866,911).

In regard to claim 1, Baer discloses (Fig. 7) a laser scanning microscope comprising:

- (a) a pulse laser oscillator (70) configured to oscillate a pulse laser beam to excite a sample (19);
- (b) a scanning mirror (16) configured to scan the pulse laser beam;
- (c) a photodetector (23) configured to detect light from the sample (19) and output an electric signal;

- (d) a sampling circuit configured to sample the electric signal output from the photodetector (*i.e.*, output of detector 23 is gated; column 13, lines 56-60) in synchronism with oscillation of the pulse laser beam output from the pulse laser oscillator (70); and
- (e) a memory (24) configured to accumulate data output from the sampling circuit.

In regard to claim 2 which is dependent on claim 1, Baer also discloses (Fig. 7) a synchronous signal generating circuit (74, 75, 76) configured to detect oscillation of the pulse laser beam from the pulse laser oscillator (70), and output a synchronous signal in synchronism with the oscillation of the pulse laser beam. Baer further discloses (column 11, lines 24-31) that the pulse laser oscillator (70) and a quenching laser (71) are synchronized and (column 13, lines 56-60) to gate the output of the detector during the time that direct scattering light from the quenching laser is falling on the detector. That is, the sampling circuit samples (*i.e.*, gates) the electric signal from the photodetector in synchronism with the quenching laser which is synchronized to the pulse laser oscillator by the synchronous signal from the synchronous signal generating circuit.

In regard to claim 3 which is dependent on claim 2, Baer also disclose (Fig. 7) that the synchronous signal generating circuit (74, 75, 76) has a delay circuit configured to output a trigger signal obtained by delaying the synchronous signal (*i.e.*, electrically adjusting to provide an interval from zero to several picoseconds; column 11, lines 37-44). Baer further discloses (column 11, lines 24-31) that the pulse laser oscillator (70) and a quenching laser (71) are synchronized and (column 13, lines 56-60) to gate the

output of the detector during the time that direct scattering light from the quenching laser is falling on the detector. That is, the sampling circuit starts to samples the electric signal from the photodetector (*i.e.*, detector is gated on) in synchronism with the quenching laser which is synchronized to the pulse laser oscillator by the synchronous signal delayed by the delay circuit.

In regard to claim 4 which is dependent on claim 3 in so far as understood, inherent in gating the output of the detector is a gate control signal (*i.e.*, pulse signal) generated by a pulse generator (*i.e.*, a signal is necessarily present in order to gate the detector on and off).

In regard to claim 8, Baer is applied as in claims 1-3 above.

In regard to claim 7 (which is dependent on claim 1) and claim 11 (which is dependent on claim 8), Baer also discloses (column 11, lines 18-24; Fig. 7) that the pulse laser oscillator (70) is a mode locked ultra fast pulse laser (generating pulse durations of 100 fs to several picoseconds) which excites fluorescence from the sample due to multiphoton excitation (*i.e.*, two photon excitation; column 10, lines 57-65).

In regard to claim 12, Baer is applied as in claims 1-3 above. Inherent in gating the output of the detector is a gate control signal generated by a pulse generator (*i.e.*, a signal is necessarily present in order to gate the detector on and off).

In regard to claim 5 (which is dependent on claim 3), claim 9 (which is dependent on claim 8), and claim 14 (which is dependent on claim 12), Baer also discloses (column 11, 37-44) that a delay set by the delay circuit is a fixed value (*i.e.*, controlled phase shift).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 6, 10, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baer (US 5,866,911) in view of Hänninen *et al.* (US 5,523,573).

In regard to claim **6** (which is dependent on claim 3), claim **10** (which is dependent on claim 8), claim **13** (which is dependent on claim 12), and claim **15** (which is dependent on claim 12), the laser scanning microscope of Baer lacks a means for changing a delay set by the delay circuit (e.g., an external input circuit). Hänninen *et al.* teach (column 7, lines 44-46) that time resolved detection involves starting detection after a delay with respect to the excitation pulse and to delay detection until background signal is sufficiently low. Baer also discloses (column 13, lines 56-60) to gate the output

Art Unit: 2878

of the detector during the time that direct scattering light from the quenching laser is falling on the detector. Therefore, it would have been obvious to one having ordinary skill in the art to provide a delay changing means (e.g., an external input circuit) in the laser scanning microscope of Baer, in order to change a delay set by the delay circuit so as to delay detection until background signal (e.g., due to light from the lasers) is sufficiently low.

### ***Response to Arguments***

11. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

### ***Terminal Disclaimer***

12. The terminal disclaimer filed on 25 September 2002 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application Number 09/652,500 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Tuesday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703) 308-4852. The fax phone numbers




Art Unit: 2878

for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SL  
December 12, 2002

  
**DAVID PORTA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**